## **Commonwealth of Virginia**

Electronic Government Implementation Division

Seat Management Section

# Model for Conducting TCO Evaluations in Medium/Large Agencies

Using the Gartner TCO Manager Software and Model for Distributed Computing Environments

Version 4.5.3

Revised December 6, 2001

## **Change Summary**

December 6, 2001 – Corrected the TCO Evaluation Schedule to correctly identify the Personnel Work Allocation worksheet. (removed the "4L" designation)

# Model for Conducting TCO Evaluations In Medium/Large Agencies

Using the Gartner TCO Manager Software and Model for Distributed Computing Environments

### **MODEL SCOPE**

This model, the assumptions contained in the model, and the corresponding worksheets are structured to meet the TCO processes and data collection requirements for medium to large sized agencies and institutions of higher education (medium is defined as more than 115 authorized positions).

### **DATA COLLECTION ASSUMPTIONS**

The following assumptions, procedures, and clarifications should be considered normal operating procedures when conducting TCO evaluations for medium or large agencies, and institutions of higher education using the Gartner TCO Manager software for Distributed Computing Environments (version 4.5.3).

#### **COMPANY PROFILE**

#### Revenue

Use the total (all sources of funds) budget amount from the Appropriation Act for the fiscal year that covers the largest part of the evaluation period. When entering this information in the Company Profile round the amount in the "revenue field" to the next highest million.

#### Evaluation Report Period

The evaluation study period should encompass a one-year period consisting of the most recent completed 12 months.

#### Average Number of Hours Worked Per Year Per Employee

The Gartner software default for this information is 1,880 hours per year. State agencies and institutions of higher education should use 1,800 hours per year. The "1.800" was arrived at as follows:

- 52 wks per year times 5 workdays per week = 260 possible workdays per year
- Assumptions for days not normally worked
  - o Average employee gets 12 days vacation year
  - o Average employee gets 5 personal days per year
  - o Average employee takes 5 sick days per year
  - o Average employee gets 13 paid holidays

Average days off per year = 35

- Work hours per year: (260 days – 35 days) times 8 hours per day = 1,800

Variations from the 1,800 hours per year and detailed reasons for the variation should be documented as part of the TCO Evaluation Report.

#### End user burden rate

The average end user burden rate (benefits, etc.) for Commonwealth full time employees is 28%. Variations from this rate and detailed reasons for the variation should be documented as part of the TCO Evaluation Report. Primary reasons for variation from this norm include employee health care options selected and increased retirement benefits associated with law enforcement staff.

#### IS staff burden rate

The average end user burden rate (benefits, etc.) for Commonwealth full time IS employees is 28%. Variations from this rate and detailed reasons for the variation should be documented as part of the TCO Evaluation Report. Primary reasons for variation from this norm include employee health care options selected and IS employees that travel extensively as part of their job (travel costs are added to the normal burden rate for IS staff in the Gartner model).

#### Location

Northern Virginia business location should be "Northeast USA", all other areas of Virginia should use a business location of "Southeast USA"

#### Futz Factor

Gartner is removing this cost category from future releases of the software, and as such, the "futz factor" is considered out of scope.

#### **CURRENT ASSETS**

#### Hardware and Software Costs

Asset counts (servers, client computers, network devices, peripherals) for the evaluation period will be as of the last day of the evaluation period.

#### **CURRENT EXPENSES**

#### Hardware and Software Costs

Hardware and software costs are normally expensed in the year they are purchased. However, for the purposes of establishing TCO metrics that remove procurement peaks and valleys, hardware and software costs are distributed over their Gartner recommended useful life. The following rules are used to distribute costs for hardware and software contained in the agency's current inventory.

- Desktop computers and software purchase costs are expensed over three (3) years.
- Portable computers and software purchase costs are expensed over two (2) years.
- Servers and software purchase costs are expensed over five (5) years.
- Peripherals purchase costs are expensed over three (3) years.
- Network Devices purchase costs are expensed over three (3) years.
- Hardware and software that are more than Gartner's recommended useful life of the asset at the beginning of the evaluation period are counted as assets with a cost of \$0.00.

Items that are acquired or that reach the end of their Gartner recommended useful life during the reporting period for an evaluation should be prorated accordingly.

Lease costs for a reporting period are expensed, not prorated.

Seat management services costs should be broken into appropriate hardware and services components and expensed.

#### **OPERATIONS EXPENSES**

#### Allocation of Staff in the IS Cost Categories

Most medium or large agencies, and institutions of higher education have dedicated in-house staff. Unless the organization has a large IT staff with many specialists and maintains detailed work or timesheet information by activity performed, they should use the Gartner defaults to spread staff cost within a sub-cost category.

#### **Example - Technical Services Client Computers and Peripherals**

Include the costs of Operations staff performing any of the following Technical Services activities for client computers and peripherals: tier II problem resolution, tier III problem resolution, traffic management and planning, performance tuning, user administration (adds, moves, changes to users), operating system support, maintenance labor, software deployment, application management, hardware configuration/re-configuration, hardware deployment, disk and file management, storage capacity planning, backup archiving and recovery, and repository management.

#### Perform the following steps:

 determine the staff and how much of their time is allocated to support each of the operations categories within the defined scope of the TCO evaluation project.
 Include IS staff, contractors, or user staff.

Hint – When performing a partial TCO for your organization, identify all staff used to support the distributed computing environment within the organization, then pro-rate their effort and cost within the scope of the TCO evaluation project.

- Collect the corresponding annual salary information or total amount paid to contractors for the evaluation period.
- USE PERSONNEL WORK ALLOCATION WORKSHEET

#### Operations and Service Desk Metrics

Collect the requested information on "USER SUPPORT ACTIVITIES, SERVICE DESK METRICS, COMMON SERVICE DESK CALLS, and DISPATCHED SUPPORT CALLS" shown in question 39 of the Tcosurv.doc. Post the results in the Tcosurv.doc.

Note – the TCO evaluation report should reflect any of the requested information that is not available or not maintained within the organization.

#### ADMINISTRATION EXPENSES

In the Current Expenses - Administration section, information about an organization's finance and administration, IS training, and end user training is collected and compiled. The information is used to calculate the Administration component of the Actual TCO. The Gartner model was developed for large organizations and assumes the cost information for this major cost category is either outsourced or included as overhead in the IS organization.

#### USE PERSONNEL WORK ALLOCATION WORKSHEET

#### Finance and Administration, IS Training, End User Training

Determine the cost of staff or the outsourced fees that were incurred to accomplish each of the Finance and Administration tasks (IS administrative assistance, asset management, budgeting and chargeback, auditing, purchasing, procurement and contract management, vendor management, and supervisory management for all the listed tasks), IS Training, and End User Training functions.

#### **END USER CALCULATIONS**

#### End User Count (USE WORKSHEET 3 – END USER AVERAGE SALARY CALCULATIONS)

The count of the number of end users for the evaluation period will be as of the last day of the evaluation period. All contractors and hourly employees must be converted to full-time-equivalent (FTE) employees. The number of end users is equal to the number of FTEs calculated using the worksheet.

#### End User Average Salary Calculations (USE WORKSHEET 3 – END USER AVERAGE SALARY CALCULATIONS)

An end user average salary calculations worksheet has been developed to ensure that an accurate and consistent unburdened end user average salary is calculated. The Gartner TCO Manager software adds the end user burden rate to this number when it calculates end user operations and downtime costs. For Virginia state government purposes the 28% burden rate is only applicable to classified employees, therefore, special calculations are required to back this amount out for hourly employees and/or consultants. In addition, 7.65 % must be added to hourly employee salaries to reflect the Commonwealth's share for social security.

That portion (all or part) of salaries for staff dedicated to maintaining and supporting an agency's distributed computing environment are included in Information Systems cost categories. Any portion of that staff not included in the IS cost categories should be included in the end user average salary calculations.

#### End User Surveys

IS Staff shall not participate in the end user survey process. As appropriate, end users that perform some IS staff related functions in the Operations and Administration cost categories as part of their job should participate in the end user survey process.

# PROCEDURES FOR CONDUCTING TCO EVALUATIONS

The following steps should be following when conducting TCO evaluations:

#### **ESTABLISH TCO EVALUTION PROJECT**

- 1. Contact agency head or key staff member to establish initial meeting date. TCO evaluation efforts should not be started or conducted without the full support of the agency head. TCO's are not about IT, they are about the business of the agency and how IT supports that business.
- 2. Develop an aggressive schedule for conducting the TCO evaluation that can be completed as scheduled. Guidance 3-5 weeks to complete all data collection, 1 week to review and analyze collected data, 1 week to develop draft TCO evaluation report and presentation materials, 1 week for agency review of draft report, 2 days to finalize and deliver final report.
- 3. Prepare schedule (USE TCO EVALUATION SCHEDULE) and worksheets (hard copy and electronic format) for distribution at the initial meeting

#### **INITIAL MEETING**

- 1. Meet with the agency head and key business and/or IS staff
- 2. Establish the purpose of the TCO, its use and distribution
- 3. Develop and finalize the scope of the TCO evaluation
- 4. Provide an explanation of the expected results (**USE SMS REPORT TEMPLATE** or previous actual evaluation report as examples)
- Gain commitment of the agency head for the TCO evaluation, establish the key players for data collection, and finalize the TCO evaluation schedule. (USE TCO EVALUATION SCHEDULE)
- 6. Engage agency staff to gain an understanding of the agency mission and any particular circumstances that can/will/should affect the scope of the TCO evaluation.
- 7. Explain and review the data collection worksheets with the appropriate agency staff. This includes:
  - Personal Work Allocation Worksheet (Gartner)
  - Worksheet 3 End User Average Salary Calculations
  - Worksheet 4 Inventory

- Worksheet 4A –TCO Inventory Miscellaneous Expenses
- Worksheet 5 Best Practices
- Tcosurv.doc document (Gartner)
- 8. Explain the meaning of end users and IS staff. Collect an automated list of all agency staff including name, email address and telephone number.

#### DATA COLLECTION AND VERIFICATION

- 1. Adjust initial proposed schedule as required
- 2. Set up Internet based survey file and survey instrument (at eGOV) to receive and process agency end user surveys.
- 3. Prepare memorandum for the agency head for distribution to appropriate agency staff for conducting the end user survey.
- 4. Set up additional meetings with appropriate agency staff as needed, including meetings for:
  - the collection of Best Practices information,
  - consensus building meeting to define the company profile information
  - consensus building meeting to complete the complexity information.
- 5. Review all worksheets for reasonableness, completeness, and accuracy
- 6. Calculate and verify all needed totals on the Personal Work Allocation worksheet and worksheets 3, 4 and 4A.
- 7. Develop totals from worksheets 3, 4, and 4A and transfer those totals and the information on worksheet 5 to the Tcosurv.doc document.
- 8. Enter information from the Personal Work Allocation worksheet and the Tcosurv.doc document into the TCO Manager software
- When end user surveys are complete, import results into the TCO Manager software
- 10. Review the TCO Manager output data, graphs and reports for reasonableness, completeness, and accuracy.
- 11. As appropriate meet with the responsible agency staff to verify the reasonableness, completeness, and accuracy of the data collected. Adjust data, collect additional information, and/or get all necessary clarifications.

#### ANALYSIS OF DATA AND DEVELOPING THE DRAFT REPORT

- Review results of the end user survey to identify trends or potential areas that need to be addressed
- 2. Use audit report to identify opportunities for improvements or areas that may have been overlooked during the data collection process.
- 3. Review results of the five major cost categories and ensure all appropriate data was collected and entered into the correct cost categories.
- 4. Identify cost categories that require logical explanations for significant differences between the "typical" and "actual" costs
- 5. Develop the necessary logical explanations (SMS report template format)
- 6. Use identified opportunities, survey results, and complexity to identify strategies for improvement. Use the TCO Manager software's "target" modeling capabilities to determine the impact of implementing key strategies for improvement.
- 7. Develop draft TCO evaluation report using the standard SMS report template format.
- 8. Submit draft report for SMS quality assurance review
- 9. Finalize draft report and deliver to agency head. Provide an overview of the results.

#### REVIEW AND FINALIZE THE DRAFT TCO EVALUATION REPORT

- 1. Meet with agency staff to discuss strategies for improvement and answer questions
- 2. Review concerns and/or recommendations for changes to the draft report.
- 3. Adjust the draft report as needed, and either finalize the report or deliver a revised draft report for review.
- 4. Finalize the report and deliver a color copy of the final report to the agency head.
- 5. Provide the Seat Management Section with electronic copies (PDF or MS Word format) of the final report. Also provide any TCO metrics that may be required by COTS or the Secretary of Technology and an electronic copy of the TCO Manager software's ".gtm" file used to develop the report.

# SEAT MANAGEMENT SECTION SUPPORT FOR TCO EVALUATIONS USING THIS MODEL

- 1. Staff is available to provide guidance, assistance, and advice to agency staff using this model and the Gartner TCO Manager for Distributed Computing Environments version 4.5.3 software.
- 2. Data collection worksheets are available on the Seat Management Section's web site at <a href="http://www.seatmanagement.state.va.us">http://www.seatmanagement.state.va.us</a>
- 3. The SMS TCO Report Template (MS Word format) is available for downloading from the Seat Management Section's web site.

### (Institutions of Higher Education name)

#### DRAFT TCO PROJECT SCOPE STATEMENT

(Recommended and minimum scope)

September 6, 2001

#### SCOPE

The (internal division/department name) staff will perform a TCO for the distributed computing environment of the (college or university name). All computing assets, user staff, IT resources, and costs collected for this study shall be limited to those directly related to using, supporting and maintaining the distributed computing environment for all Administrative functions.

The following are scope criteria for this evaluation:

- The evaluation period will cover the most recent twelve months
- Physical counts (assets, end users, etc.) will be as of the last day of the reporting period
- Servers are considered out of scope if a dumb terminal can run the application unchanged
- As appropriate, servers and administration and operations staff will be prorated across functional areas

The following are out of scope for this evaluation:

- Mainframes
- Personal digital assistant (PDA) computers
- Student owned client computers (desktops and portables)
- All distributed computing assets not directly owned or leased by the university name. This includes those assets acquired as part of research grant funds, privately owned bookstore equipment, etc.
- Student Labs
- Networking Infrastructure in Student Dorms

### (agency name)

#### DRAFT TCO PROJECT SCOPE STATEMENT

(Recommendation – large agencies should break their TCO evaluations into multiple parts so that any one part can be successfully completed within an 7-10 week timeframe)

October 2, 2001

#### SCOPE

The (internal division/department name) staff will perform a TCO for the distributed computing environment of the (agency name). All computing assets, user staff, IT resources, and costs collected for this study shall be limited to those directly related to using, supporting and maintaining the distributed computing environment for (all or specific business) business functions. Specify all business locations included in the evaluation.

The following are scope criteria for this evaluation:

- The evaluation period will cover the most recent twelve months
- Physical counts (assets, end users, etc.) will be as of the last day of the reporting period
- Servers are considered out of scope if a dumb terminal can run the application unchanged
- As appropriate, servers and administration and operations staff will be prorated across functional and business areas

The following are out of scope for this evaluation:

- Mainframes
- Personal digital assistant (PDA) computers

# TCO Evaluation Schedule For (agency name)

#### **Seat Management Sections Contacts -**

Data Collection Items (see TCO Distributed Computing Assessment TCO Survey)	Collection Process	Agency Contact Name /Phone/Email	Start Date	End Date
Company Profile (1-18)	Consensus meeting, results posted in 9L Tcosurv.doc (questions 1-18)			
Current Environment Assets (19 –27)	SMS Worksheet 4, results posted to 9L Tcosurv.doc (Asset questions 19, 20, 22, 23, 24, 26, and 27)			
Current Expenses (28 – 32)	SMS Worksheet 4 and 4A. Results posted to 9L Tcosurv.doc (Expense questions 28 - 32)			
Operations Expenses (33 – 38)	Consensus meeting, using the Personal Work Allocation worksheet			
Operations and Service Desk Metrics (39)	Collect the requested information and enter the results in Tcosurv.doc question 39.			
Administration Expenses (40 – 42)	Consensus meeting, using Personal Work Allocation worksheet			
Complexity (43 – 74)	Consensus meeting, results posted to 9L Tcosurv.doc (questions 43-74)			
Best Practices (75)	Consensus meeting IT staff and Worksheet 5, results posted to 9L Tcosurv.doc (question 75)			
End-User Operations and Downtime (76 –77) # users and avg end user salary	SMS Worksheet 3, results posted to 9L Tcosurv.doc (questions 14 and 76)			

#### (continued)

Data Collection Items (see TCO Distributed Computing Assessment TCO Survey)	Collection Process	Agency Contact Name /Phone/Email	Start Date	End Date
End-User Operations and Downtime (78 (1-42)) HTML end user survey	Internet on-line survey (from eGOV or agency established HTML survey) with results imported into the TCO Manager software			
DRAFT TCO REPORT	Hardcopy color Draft Report (SMS report template)			
Final TCO Report	Hardcopy color Report Plus PDF files of Report			

• Provide a list of agency personnel with phone numbers and e-mail addresses.

	Technical Services - Client Computers and Peripherals	Technical Services - Servers	Technical Services - Network	Planning and Process	Database Management and	Samias Deal			
Name Empoyee A	Client Computers and Peripherals	Services - Servers	Services -	Process		Samulas Deals			
Empoyee A Employee B	0.50	0.20		Management	Administration	Service Desk (Tier 0/1)	Finance and Administration	IS Training	End-User Training
Employee B					0.20			_	
. ,					0.50	0.20			
TOTALS	0.50	0.00	0.00		0.70	0.20		0.00	£0.00
IUIALS	0.50	0.20	0.00		0.70	0.20		0.00	\$0.00

Page 1

		Personnel Expense by C	ategory (\$ 000's)						
	T O T A		Technical Services - Client Computers	Technical	Technical	Planning and	Database		
	L	Unburdened	and	Services -	Services -	Process	Management and		Finance and
Out of Scope		Annual Salary (\$ 000's)	Peripherals	Servers	Network	Management	Administration	(Tier 0/1)	Administration
0.10	1.00	\$50	\$25.00	\$10.00	\$0.00	\$0.00	\$10.00	\$0.00	\$0.00
0.30	1.00	\$60	\$0.00	\$0.00	\$0.00	\$0.00	\$30.00	\$12.00	\$0.00
	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
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	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$0.40	\$2.00		\$25.00	\$10.00	\$0.00	\$0.00	\$40.00	\$12.00	\$0.00

PERS-SPL.XLS Page 2

			Т
			0
			T
			A
	End-User		L
IS Training	Training	Out of Scope	(\$ 000's)
\$0.00	\$0.00	\$5.00	\$50.00
\$0.00	\$0.00	\$18.00	\$60.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
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\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
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\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$0.00	\$0.00
\$0.00	\$0.00	\$23.00	\$110.00

PERS-SPL.XLS Page 3

#### Organization contract person and phone -

Instructions Classified/Salaried Employees

- 1 List all classified/salaried employees in Column A. Include the agency head with the classified/salaried employees.
- 2 Compute each classified/salaried employee's annual salary. This should be the actual gross salary paid the employee for the evaluation period or the employee's annual salary amount as of the last day of the evaluation period. (Note use one method or the other, do not combine actual gross salary paid with annual salary amounts)
- 3 If actual gross salary paid was used in "2" above, set all "# FTEs" (column E) equal 1.00. If the annual salary amount as of the last day of the evaluation period was used in "2" above, complete the Column E (# FTEs) for each listed employee. Use "1.00" for all employees that were present for the whole evaluation period, and use some percentage of an FTE for those emloyees that only worked part of the evaluation period (new hires, retired, resignations, etc.).
- 4 Sum the amounts paid in Column F.

CLASSIFIED/SALARIED EMPLOYEES		Annual Salary	# FTEs (.10 - 1.00)	Amount Paid
Employee A		\$40,000		\$40,000
Employee B	EXAMPLE	\$36,000		\$36,000
Employee C (retired June 30)		\$50,000		\$25,000
			Total	\$101,000
CLASSIFIED/SALARIES EMPLOYEES		Annual Salary	# FTEs (.10 - 1.00)	Amount Paid
1				\$0
2				\$0
3				\$0
4				\$0
5				\$0
6				\$0
7				\$0
8				\$0
9				\$0
10				\$0
_			Total	\$0

Instructions Hourly (P14) Employees or Contractors

**End User Average Salary Calculations** 

- 1 List all hourly employees followed by contractors that are counted as end users in Column A.
- 2 Compute Column D (Amount Paid) using one of the following:
- List the hourly rate each listed employee/contractor was paid in Column B and the corresponding number of hours worked during the evaluation period in Column C.

  Complete Column F by multiplying the hourly rate in Column B times the number of hours worked in Column C.

or

- List the actual gross amount paid to the employee during the evaluation period in Column F
- 3 Sum the amounts in Column F.

HOURLY EMPLOYEES	Rate/Hour	Hours Worked		<b>Amount Paid</b>
Employee D	10.00	1000.00		\$10,000
Employee E	9.30	500.50		\$4,655
			Total	\$14,655

HOURLY EMPLOYEES	Rate/Hour	Hours Worked			Amount Paid
1					\$0.00
2					\$0.00
3					\$0.00
4					\$0.00
5					\$0.00
6					\$0.00
7					\$0.00
8					\$0.00
9					\$0.00
10					\$0.00
11					\$0.00
	<u> </u>	·	·	Total	60

Hourly unburdened

\$0

#### **End User Average Salary Calculations**

CONTRACTORS (END USERS)	Rate/Hour	Hours Worked		Amount Paid
Contractor 1	25.20	1725.00		\$43,470
Contractor 2	39.50	900.00		\$35,550
			Total	\$79,020

CONTRACTORS (END USERS)	Rate/Hour	Hours Worked		Amount Paid
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
			Total	\$0

#### **Seat Management Section Calculation Notes**

Note 1 - P14 hourly employees = (amount paid) x 1.0765 (state SSN) / 1.28

Contractor unburdened

\$0.00

Note 2 - contractors = (total amount paid) / 1.28

Note 3 - Notes 1 and 2 remove the burden rate for P14s and contractors that is added back by the software

Note 4 - Total End Users - count of the individuals shown in column A for salaried employees, and the number of full time equivalents for hourly employees and contract

Total End Users =

0

Unburdened end user avg salary

#DIV/0!

# agency name Inventory for TCO Evaluation Report Evaluation Period (start - end)

SERVERS											
rimarily used to ex	ecute business applications	oviding basic file and print shar or store large amounts of data Notes server; and (4) <b>Utility/C</b>	accessed by applica	tions. E	xample - Ora	cle Server; (3)	Email/Inter(In	ntra)net/GroupW	are - Servers the		
<ol> <li>Enterprise - An nultiple functions in Clustered servers a</li> </ol>	enterprise server supports uncluding file/print, application	e four server sizes: (1) Group up to 1000 concurrent end user , e-mail, communication, utility, server but must be sized appro	s; and (4) Large Ente , and intranet service	<b>erprise</b> s. Excl	- A large ente ude internet s	erprise server s servers used b	supports more y external cust	than 1000 concu	urrent end users.  y application ser	These servers vers, and proces	can support single or s control devices.
Name (optional)	Brand (optional)	1 Function (File/print; Email; Application; Utility)	2 Size (Group, Department, Enterprise, Large Enterprise)	QTY	Server Operating System	Production or IS	Purchased or Leased	Purchase Month/Yr	Cost per unit (Purchase prices or monthly lease fee)	TCO Expensed Amt	Comments (identify any maintenance fees and timeframes here)
Votes: Server cos	ts are expensed over a 5 v	ear period (servers greater ti	han 5 vears old at th	e hegi	nning of the	report period	have costs -	\$0.00)			
		ommended depreciation perio	•	o begi	and or the	. oport period		<i>\$0.00).</i>			
	TCO Expensed Amt for eac										
		per unit) divided by 5 (years)									
	Leased - (QTY x Cost per			<u>.</u>							
otai annuai serve	er costs equals the sum of	the Annual TCO Expensed A	mt for all server cos	ts calc	ulated above	•					

Evaluation Period (start - end)

#### **CLIENTS (Desktops and portables)**

**Desktop** - Specify desktop clients by operating system. Include all assets for the in-scope users. Be sure to include all desktops that have been purchased by the enterprise for telecommuters. Segment the client assets between production and IS hardware. Exclude mobile clients as they are specified elsewhere. Mobile clients includes those mobile computers that are normally in a docking station. Exclude clients that are used as process control devices, as well as clients that are in staging but have not yet been deployed.

**Portable** - Specify mobile (portable) clients by operating system. Include all assets for the in-scope users. Be sure to include all mobile computers that have been purchased by the enterprise for telecommuters, and road warriors, as well as in-house users using docking stations. Segment the client assets between production and IS hardware. Exclude mobile clients that are used as a process control devices, as well as mobile clients that are in staging but have not yet been deployed.

**Production** - Production clients are used by end users to perform daily work.

IS - IS clients are used exclusively by IS personnel in performing operations or administration activities. Examples include training, test, service desk, and management consoles. If the IS computer is used primarily for enterprise e-mail and to run personal productivity applications, then the asset should be included in the production asset counts rather than IS. IS devices should be limited to devices dedicated to IS functions and cannot be directly associated with an individual (i.e., training rooms, test equipment, network monitors, etc.).

· ·		(i.e., training rooms, test equip				counts rather	marrio. 10 de	vices siloulu be	iiiiiiled to device	s dedicated to i	3 Idilolions and
User Name or PC ID (optional)	Brand (optional)	Desktop or Portable		QTY	Client Operating System	Production or IS	Purchased or Leased	Purchase Month/Yr	Cost per unit	TCO Expensed Amt	Comments (identify any maintenance fees and timeframes here)
	<del></del>										
Notes: Desktop co	sts are expensed over a 3	3 year period (desktops great	er than 3 years old	at the b	eginning of	the report per	iod have cost	s = \$0.00).			
	•	2 year period (portables great		d at the	beginning o	f the report p	eriod have cos	sts = \$0.00).			
		ommended depreciation perio	ods and useful life.								
	CO Expensed Amt for like	•									
		per unit) divided by 3 (years)	I								
	Leased - (QTY x Cost per CO Expensed Amt for like										
		per unit) divided by 2 (years)	<u> </u>								<del> </del>
	Leased - (QTY x Cost per										
		ual TCO Expensed Amt for a	II portable and desk	top uni	ts calculated	above					

Evaluation Period (start - end)

Peripherals										
Peripherals - Specify the current quantities of peripherals	eripherals by type. Include all	enterprise assets for	the in-s	cope users. I	Be sure to inclu	ide all peripher	als that have be	en purchased by	the enterprise f	or telecommuters.
Segment the peripheral assets between production and IS hardware. Exclude peripherals that are in staging but have not yet been deployed.										
Peripherals include enterprise printers/plotters, departmental printers/plotters, personal printers, CD-ROM (Jukeboxe), network faxes, scanners, and other.										
Enterprise - An enterprise printer/plotter is a sp	ecialized, high capacity printer	serving a large num	ber of u	sers or large	production prin	nt volumes.				
				· ·						
Department - A departmental printer/plotter is a	a typical network printer serving	a group or departme	ent with	low to mode	rate print volun	nes. Its main fu	nction is suppor	ting user print re	quirements.	
	,	, , , ,			·		• • • • • • • • • • • • • • • • • • • •	0 1	•	
Personal - A personal printer is a non-networke	ed, non-shared printer.									
Draduation parinkarale are used by and users	to workerme dellerment									
Production peripherals are used by end users	to perform dally work.									
10									0 -1	Librari Direction all An
IS peripherals are used exclusively by IS person							k, and managen	nent consoles.	5 devices snouic	i be limited to
devices dedicated to IS functions and cannot be	e directly associated with an inc	dividual (i.e., training	rooms,	test equipme	nt, network mo	nitors, etc.).				
	Enterprise									Comments
	or									(identify any
	Department				Production	Purchased			тсо	maintenance fees
	or				or	or	Purchase		Expensed	and timeframes
Brand (optional)	Personal		QTY		IS	Leased	Month/Yr	Cost per unit	Amt	here)
Brand (optional)	Personal		QII		13	Leaseu	WOTILITY TT	Cost per unit	AIII	nere)
Notes: Peripheral costs are expensed over a	a 3 vear period (peripherals o	reater than 3 years	old at t	he beginnin	of the report	period have o	costs = \$0.00).			
Expensed periods are based on Gartner reco	nmended denreciation neri	nds and useful life	1	ne beginning	g or the report	portouriare	- <del> </del>			
Calculate Annual TCO Expensed Amt for all		Jao ana asciai me.								
	per unit) divided by 3 (years)	1						1		
Leased - (QTY x Cost per								1		
	otal peripherals cost equals the sum of the Annual TCO Expensed Amt for all peripherals calculated above									

Evaluation Period (start - end)

#### NETWORK DEVICES

Specify the current quantities of network devices by type. Include all corporate assets for the in-scope users. Segment the network devices assets between production and IS hardware. Exclude network devices that are in staging but have not yet been deployed.

Hubs - A Network Hub is a connectivity component that provides a common connection among computers in a star-configured network. Active hubs regenerate and retransmit network data. Passive hubs simply organize wiring. The Network Hub is also known as a repeater. An average hub is an 8 port stand alone device. Stacked hubs should be specified as multiple hubs based on the total port count, i.e., a 16 port hub should be counted as two hubs.

Routers - A device used to connect networks of different types, such as those using different architectures and protocols. Routers can switch and route information across multiple networks by exchanging protocolspecific information between separate networks. Routers determine the best path for sending data and filtering broadcast traffic to the local segment. Routers are used to isolate network sections and provide interconnectivity amongst workgroup and department level servers.

Routers are useful in segmenting very large networks into smaller subnetworks. Routers have on average 8 ports and is a chassis based solution. Smaller routers should be counted as less than one router by dividing the number of ports by 8. Larger chassis based routers should be counted as multiple routers. Rounding of fractional counts to the next highest whole number is required for the total count. Routers handling Wide area data should be excluded from the scope of the study. If a router is handling both wide area and local data, allocate what is in scope based on the number of ports handling each type of traffic.

Bridges - A bridge is a device used to join two local or remote networks regardless of higher level protocols involved. By connecting networks with a bridge, the bridge forms a single logical network, centralizing network administration and allowing stations on either network to access resources on the other. Bridges can be used to increase the allowable length or number of nodes for a given network.

Switches - A switch is a hardware/software based network device that provides intelligent hub, bridge, and router functions in a single device. The switch provides high speed dedicated logical network connections between clients, servers, and other network devices.

Gateways - A gateway is a device that connects two dissimilar local area networks or connects a local area network to a wide-area network, a minicomputer, or a mainframe. A gateway has its own processor and

nemory and may perform protocol conversion and bandwidth conversion.											
Туре		# of Ports for Hubs & Routers		QTY		Production or IS	Purchased or Leased	Purchase Month/Yr	Cost per unit	TCO Expensed Amt	Comments (identify any maintenance fees here)
Notes: Network d	levices costs are expensed	over a 3 year period (devices	greater than 3 yea	rs old a	nt the beginni	ing of the rep	oort period ha	ve costs = \$0.00	0).		
		mmended depreciation period									
Calculate Annual TCO Expensed Amt for all owned and leased network devices as follows:											
	Purchased - (QTY x Cost per unit) divided by 3 (years)										
	Leased - (QTY x Cost per										
Total network dev	rices cost equals the sum o	f the Annual TCO Expensed A	mt for all network	devices	s calculated a	above					

Evaluation Period (start - end)

#### **SERVER SOFTWARE**

Annualized capital expenditures on new and upgraded server software. Server software includes operating systems, utilities, business applications, e-mail, GroupWare, communications, and connectivity. Included are commercial applications, and shrink wrap software. Site licenses or select agreements are typically capitalized over the duration of the agreement. Software that is licensed under an annual subscription is recorded as an annual expense. If a maintenance or support agreement exists on a software license, and the main purpose of the agreement is to obtain updates and upgrades, the cost for the maintenance/support agreement should be recorded here. If the agreement is for technical support, or the support portion can be allocated, record that portion in Operations. Software that is resident on a server but used by clients or is difficult to allocate cost wise between servers and clients should be allocated to the client software category. Do not include the cost of IS software in this section.

#### Software Function

Business/Engineering - Annualized expenses for all server executing applications and application foundations including financial, accounting, enterprise resource planning, technical design, or other vertical applications, business software, and server based applications. Client based applications that reside on servers should have costs allocated under client software.

Database/Data Management/Development Tools - Annualized expenses for all server database licenses. Include the costs for database utilities, data mining, business intelligence tools and report writers that run on production servers. Do not include the costs of application software that uses these databases. Do not include the costs of IS software.

Messaging/Groupware - Annualized expenditures on new and upgraded e-mail, GroupWare and collaboration software. Specify the server component of the costs only. Do not include the cost of IS software in this section.

Other - Annualized expenditures for new and upgraded server executing software not included in the categories above e.g. NOS. Do not include the cost of IS software in this section.

#### **Server Functions**

File - Servers providing basic file and print sharing services to users. Personal productivity applications are often run from these servers.

Application - Servers that are primarily used to execute business applications or store large amounts of data accessed by applications. Example - Oracle Server.

Email - Servers that primarily provide these services. Example Web server, Post Office Server, Lotus Notes server.

Utility - Would include infrastructure servers - Example - Domain server.

	Software name (list each)		Software Function (Business, Database, Messaging, Other)		Server Function (File, Application , Email, Utility)	Production or IS	Server Purchase Month/Yr	Cost per unit	TCO Expensed Amt	Comments (identify any maintenance fees and timeframes here)
							•			
	-	_								
Calculate Annual	TCO Expensed Amt for ser	ver software as follows: (QT)	Y x Cost per unit) di	vided b	y 5 (years)					
Total server softw	are costs equals the sum o	of the Annual TCO Expensed	Amt for all server s	oftware	calculated a	above	 		·	

Evaluation Period (start - end)

#### CLIENT SOFTWARE

Annualized capital expenditures on new and upgraded client software. Client software includes operating systems (when not initially included in the hardware purchase price), utilities, business applications, e-mail, GroupWare, communications, and connectivity. Included are commercial applications, shrink wrap software, and personal productivity tools. Client software is differentiated from software in that it executes on the desktop. Software residing on servers, but executing on the desktop is considered client software. Software that is difficult to allocate cost wise between servers and clients should be allocated to the client software category.

#### TYPE SOFTWARE

Personal productivity and personal database applications - Annualized expenses for new word processors, spreadsheets, presentation packages, personal databases, and other personal productivity software executing on client systems. Also include upgrades. Do not include expenses that were included with the original purchase price of the hardware.

Business and engineering applications - Annualized expenses for all client executing business and engineering applications including financial, accounting, technical design, or other vertical applications. Do not include the costs for utilities, development tools, communications, e-mail, and GroupWare here.

Database, data management, and development tools - Annualized expenses for all client database licenses. Include the costs for database utilities, data mining, business intelligence tools, statistical analysis software and report writers. The purchase price of all databases are included here. Do not include the costs of IS software.

Messaging and groupware - Annualized expenditures on new and upgraded e-mail, GroupWare and collaboration software. Specify the client component of the costs only. Do not include the cost of IS software in this s

Other - Annualized expenses for all software that does not fit into the categories above e.g. operating systems and utilities. Do not include the costs of IS software.

Client Type			Type Software (Personal, Business, Database/Dev,			Production		Client desktop		тсо	Comments (identify any maintenance fees
(desktop or			Messaging, or			or		Purchase		Expensed	and timeframes
portable)	Software name (list each)		Other)	QTY		IS		Month/Yr	Cost per unit	Amt	here)
Notes: Client and				·	- wahla						
		ver the same period as the co	orresponding deski	top or p	ortable.						
Calculate Annual	TCO Expensed Amt for like	per unit) divided by 3 (years)									
	Leased - (QTY x Cost per										
Calculate Annual	TCO Expensed Amt for like										
Odiculate Allitudi		per unit) divided by 2 (years)									
	Leased - (QTY x Cost per										
Total client softw		f the Annual TCO Expensed A	Amt for all portable	and de	sktop units d	calculated abo	ove				
	,	, , , , , , , , , , , , , , , , , , , ,			•						

# EXPENSE DEFINITIONS AND WORKSHEET Upgrades, Spares/Spare Parts and Supplies

#### **SERVERS**

**Upgrades** - Hardware upgrades for servers are the annualized expenses for various hardware improvements made to servers, including hard drives, processor, memory, network connectivity, removable media, uninterruptible power supplies. Such upgrades were not included in the original purchased bundle.

Description	Amount	Allocate amount to File/Print, Application/Database, Email/Groupware, and Utility/Comm/Other

**Spares/Spare Parts** - The annualized expenses for spare server components including disk drives, processors, motherboards, network connectivity, removable media devices, and other components.

Do not include the cost of a hot spare server, include the hot spares in server expense, depreciation or lease.

The spare parts charge in maintenance contracts should be allocated to this category.

Description	Amount	Allocate amount to File/Print, Application/Database, Email/Groupware, and Utility/Comm/Other

**Supplies** - The annualized expense for server related consumables such as diskettes, programmable CD-ROMs, backup tapes, removable media and any other computer supplies for servers.

This fee does not include toner or paper for printers that are server attached.

Description	Amount	Allocate amount to File/Print, Application/Database, Email/Groupware, and Utility/Comm/Other

(date) - 1 -

#### **CLIENTS (DESKTOPS AND PORTABLES)**

**Upgrades** - Hardware upgrades for clients are the annualized expenses for various hardware improvements made to clients, including hard drives, processor, memory, network connectivity, removable media, and uninterruptible power supplies. Such upgrades were not included in the original purchased bundle.

Description	Amount	Allocate Amount between Desktops and Portables

**Spares/Spare Parts** - The annualized expenses for spare client components including disk drives, processors, motherboards, network connectivity, removable media devices, and other components.

Do not include the cost of a hot spare client, include the hot spares in client expense, depreciation or lease.

The spare parts charge in maintenance contracts should be allocated to this category.

Description	Amount	Allocate Amount between Desktops and Portables

**Supplies** - The annualized expense for client-related consumables such as diskettes, programmable CD-ROMs, backup tapes, removable media and any other computer supplies for clients.

This fee does not include toner or paper for printers that are client-attached.

Description	Amount	Allocate Amount between Desktops and Portables

(date) - 2 -

#### **PERIPHERALS**

**Upgrades** - Hardware upgrades for peripherals are the annualized expenses for various hardware improvements made to peripherals, including peripheral memory, network connectivity, removable media, uninterruptible power supplies. Such upgrades were not included in the original purchased bundle.

Description	Amount	Allocate Amount to Personal Printers/Plotters, Dept/Enterprise Printers, and Other Peripherals
	_	

**Spares/Spare Parts** - The annualized expenses for spare peripheral components.

Do not include the cost of a hot spare peripheral, include the hot spares in peripheral expense, depreciation or lease.

The spare parts charge in maintenance contracts should be allocated to this category.

Description	Amount	Allocate Amount to Personal Printers/Plotters, Dept/Enterprise Printers, and Other Peripherals

**Supplies** - The annualized expense for peripheral related consumables such as toner, writable CD-ROMs, and any other supplies for peripherals.

This fee does not include paper for printers.

Description	Amount	Allocate Amount to Personal Printers/Plotters, Dept/Enterprise Printers, and Other Peripherals

(date) - 3 -

#### **NETWORK DEVICES**

**Upgrades** - Hardware upgrades for network devices are the annualized expenses for various hardware improvements made to network devices. Such upgrades were not included in the original purchased bundle.

Description	Amount

**Spares/Spare Parts** - The annualized expenses for spare network device components.

Do not include the cost of a hot spare network device. Include the hot spares in network device expense, depreciation or lease.

The spare parts charge in maintenance contracts should be allocated to this category.

Description	Amount	

**Supplies** - The annualized expense for network device related consumables.

Description	Amount

(date) - 4 -

#### IS HARDWARE AND SOFTWARE

IS Hardware is hardware that primarily supports an IS process and not a business or user process. Examples are test and training devices, and help desk consoles. Devices used by IS personnel for personal productivity functions would not be considered IS hardware.

For the IS hardware (servers, clients, peripherals, and network devices) specified in the Current Environment - Assets questionnaire, specify the annualized capital expenses.

Specify the costs according to the function served by the IS hardware.

**Upgrades** - Hardware upgrades for clients are the annualized expenses for various hardware improvements made to clients, including hard drives, processor, memory, network connectivity, removable media, uninterruptible power supplies. Such upgrades were not included in the original purchased bundle.

Description	Amount

**Spares/Spare Parts** - The annualized expenses for spare client components including disk drives, processors, motherboards, network connectivity, removable media devices, and other components.

Do not include the cost of a hot spare client, include the hot spares in client expense, depreciation or lease.

The spare parts charge in maintenance contracts should be allocated to this category.

Description	Amount

**Supplies** - The annualized expense for client related consumables such as diskettes, programmable CD-ROMs, backup tapes, removable media and any other computer supplies for clients.

This fee does not include toner or paper for printers that are client attached.

Description	Amount

(date) - 5 -

#### (AGENCY NAME)

#### **TCO BEST PRACTICES WORKSHEET 5**

Best Practices	Scope % (0-100)	Level (Basic, Medium, Advanced)
Technology Improvements - Asset Management		Advanced
Automated Asset Management		
Software Inventory		
Hardware Inventory		
Automated Software Distribution		
Technology Improvements - Systems Management		
Virus Detection and Repair		
Systems Management		
Server Based Client Image Control		
User State Management and Restore		
Technology Improvements - Managed PC		
Unattended Power Up		
Client Hardware Event Management		
Low Impact Upgradeability		
Technology Improvements - Scalability		
Scalable Architecture		
Low Risk, High Quality Vendor/Provider Selection		
Technology Improvements - Business Protection		
Fault Tolerance		
Automated Backup and Restore		
Hardware Physical Security Management		
Technology Improvements - Service Desk		
Service Desk Problem Management and Resolution		
Client Remote Control		
Process Improvements - User Management		
Enterprise Policy Management		
Locked User Environment		
Data Security Management		
Change Management		
Process Improvements - Standardization		
Vendor Standardization		
Platform Standardization		
Application Standardization		
Centralized and Optimized Procurement		
Process Improvements - Practice Management		
More Time Spent Planning Versus Implementing		
Service Level Tracking and Management		
Capacity Planning		
TCO Lifecycle Management		
People Improvements		
User Training		
IS Training		
IS Staff Highly Motivated		
Stable IS Organization		

Terms and definitions for TCO Best Practices and contained in Attachment B of the DRAFT TCO Guidelines <a href="http://www.seatmanagement.state.va.us/documents/TCOGuidance.html">http://www.seatmanagement.state.va.us/documents/TCOGuidance.html</a>